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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

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SUBJECT—

TITLE

FOREST INSECT SURVEY, LASSEN VOLCANIC NATIONAL PARK

Season of 1940

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By
R. C. Hall
Berkeley, California
February 28, 1941

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Forest Insect Laboratory
Berkeley, California
February 28, 1941

FOREST INSECT SURVEY, LASSEN VOLCANIC NATIONAL PARK

Season of 1940

APPROVED BY:

J. M. MILLER
Senior Entomologist, In Charge

SUBMITTED BY:

R. C. HALL
Associate Entomologist

FOREST INSECT SURVEY, LASSEN VOLCANIC NATIONAL PARK

Season of 1940

INTRODUCTION

The annual forest insect survey of the Lassen Volcanic National Park was conducted by Ralph C. Hall and P. J. C. Brown, members of the Bureau of Entomology and Plant Quarantine Forest Insect Laboratory at Berkeley, California, assisted by Sterling B. Vaughn, Ranger in Charge of Forestry, of the Lassen Volcanic National Park. This survey was made late in October 1940. It consisted of a rather thorough reconnaissance of high use areas and areas adjacent to some of the main highways. In the areas listed in Table I a rather complete coverage was made where each suspicious tree was examined and measured. Along the highways, the survey consisted of counts of infested trees, by species, on a strip approximately 2½ chains on each side. The figures used in Table I are expected to be rather close to the true number of trees which were faded at the time of the cruise while those in Table II are expected to be only approximate. These figures are expected to represent the minimum number needing control as additional trees may show up as fades in the spring. For that reason another rough check will be made in most of these areas early in the spring of 1941. This additional check is particularly needed in the lodgepole areas, as practically all the infested trees spotted in October were still green.

CHARACTER OF THE 1940 INFESTATION

In general the infestation of the 1940 season was characterized by increases in practically all insect species operating in the park except in the areas where adequate control measures were taken in the spring of 1940. In the latter cases there was an apparent slight decrease in infestation. The most notable increase occurred in the mountain pine beetle infestation in lodgepole pine, where the number of infested trees in 1940 showed an increase of from four to five hundred percent. Infestation of the fir engraver beetle in red and white fir appears to be definitely increasing in all areas examined with moderate increases in the western pine and Jeffrey pine beetle and mountain pine beetle in sugar pine.

DISCUSSION OF SPECIFIC AREAS

Infestation conditions in the park will be discussed under three main headings: A. High Use Areas, which include camp grounds, picnic grounds, and permanent building sites; B. Areas Along Highways; and C. Miscellaneous.

A. High Use Areas

These areas will be discussed under seven headings: 1. Manzanita Lake, 2. Summit Lake, 3. Kings Creek, 4. Sulphur Works, 5. Juniper Lake, 6. Horseshoe Lake, and 7. Butte Lake. These are shown on the map in Figure 1 with the colored portions indicating the approximate area on which spotting of infested trees was rather thorough.

1. Manzanita Lake

This area includes all the timbered area from the "Y" north of the Manzanita Lake Checking Station to the Chaos Jumbles. This is the area where the bulk of the control work was conducted on Jeffrey pine in the spring of 1940 which probably accounts for keeping this insect in an endemic state. Losses in Jeffrey pine in this area in 1940 were confined almost entirely to single trees or occasionally pairs. This is in direct contrast to the conditions prevailing outside the Park area to the northeast, where grouping tendency in Jeffrey pine for 1940 was very common. In the area a few miles northeast of Manzanita Lake three groups of Jeffrey pine were found which contained 16, 12, and 7 trees respectively.

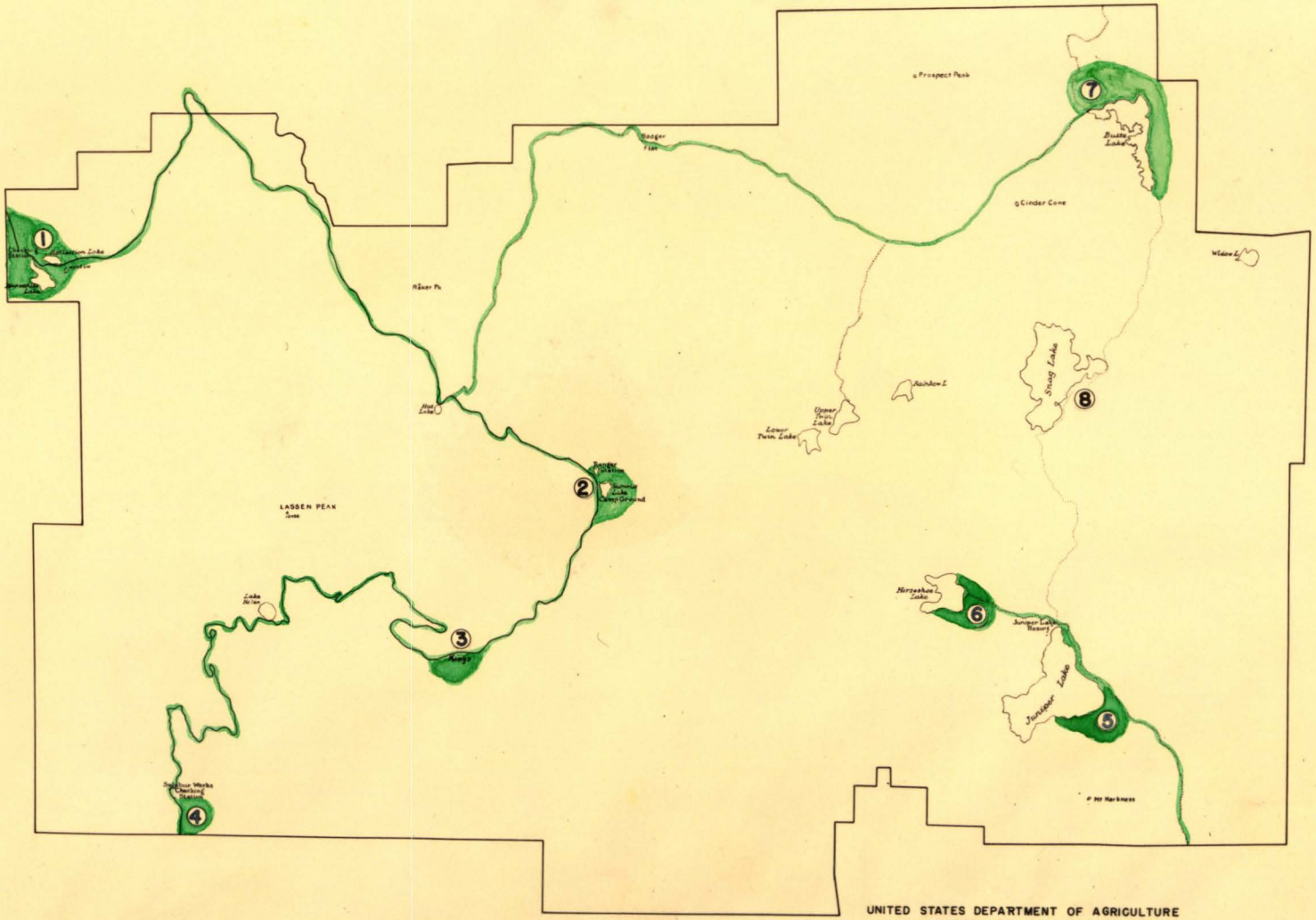
There is listed in Table I the species by diameter of all infested trees found in this area. This includes 27 Jeffrey pine, 5 white fir, 2 sugar pine, 1 lodgepole pine, and 1 western white pine. About half of these trees, however, are in the small pole group under 20 inches d.b.h., which can be controlled with a minimum of effort. In the Jeffrey pine practically all trees over 20 inches in diameter contain the Jeffrey pine beetle while the smaller trees contain principally flatheads and Ips. The two small sugar pines also contain flatheads. The white fir is infested with the fir engraver beetle and occur along the stream course just south of the power plant.

Recommendations: Control is strongly urged for all the infested trees in this area and should have first priority.

2. Summit Lake

This unit includes the area around the Ranger Headquarters, the camp ground and the timber adjoining the lake.

The infestation here is confined almost entirely to mountain pine beetle in lodgepole and fir engraver in red fir. No control work was done in this area in 1940 and there has been an increase of from four lodgepoles in 1939 to twenty-one in 1940. The infestation has spread out from each infested 1939 tree until there is a condition approaching epidemic tendencies. Most of the attacks for 1940 appear successful and abundant.



UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
FOREST INSECT LABORATORY - BERKELEY, CALIFORNIA

FOREST INSECT SURVEY
LASSEN VOLCANIC NATIONAL PARK
CALIFORNIA

Table I. Insect Infested Trees in High Use Areas - Winter of 1940
Figures indicate D. B. H. of individual trees.

Area	Jeffrey Pine DBH	Ponderosa Pine, DBH	Lodgepole Pine DBH	White Fir DBH	Red Fir DBH	Sugar Pine DBH	Total Number Trees
Manzanita Lake	59.38.38.36.35. 35.33.33.33.32. 32.30.26.22.20. 19,17.15.14.14. 13.9.8.6.6.6.5		12	43,36,32. 26,32		19.17	36
Summit Lake			28.28.27.25.20. 18.17.16.15.15. 15.14.12.11.11. 10.10.9.8.7.7		70		22
Kings Cr. C.G.			35.34.32		60		4
Sulphur Works C.G.					38.36.32. 32.30.24. 20.19.18. 16,14		12
Juniper Lake Camp Ground			28.27.24.18.16. 16.14.12.12.12. 10.9.9				13
Horseshoe Lake C.G.			30.28.28.26.24. 20.18.16				8
Butte Lake	46,42,40,39,38, 36,36,30,28,28. 15	34,37	22.20.18.18.16. 14.14.12.12.10. 10.10.9.8.8				28
Total No. of Trees	38	2	61	5	14	2	123
Average D.B.H.	30	35	18	34	31	18	24
Range in D.B.H.	5-59	34-37	7-35	26-43	14-70	17-19	5-70

Recommendations: Control is strongly urged for the lodgepole pine in this area and the red fir if facilities permit; the latter species to have low priority.

3. Kings Creek Camp Ground

Insect activity in this area is comparatively low and only four infested trees were found, 3 lodgepole and 1 red fir.

Recommendations: Control is recommended in this area but it is to have a low priority status.

4. Sulphur Works Camp Ground

There is a heavy, active infestation of the fir engraver in red fir in the newly developed camp ground in this area. Twelve trees were found which contain active brood.

Recommendations: Control is recommended for this area, but with a medium priority status.

5. Juniper Lake Camp Ground

The infestation of the mountain pine beetle in lodgepole pine in this area does not appear to be so active as at Summit Lake. However, there has been a material increase from 6 trees in 1939 to 13 trees in 1940 in the camp ground proper.

Recommendations: Control is recommended for this area if snow conditions permit access prior to May 15.

6. Horseshoe Lake Camp Ground

This unit includes the area around the Ranger Headquarters and the camp ground. Conditions here are similar to those at Juniper Lake. There has been an increase of from 4 trees in 1939 to 8 trees in 1940. However, the infestation in 1940 does not appear to be so aggressive as in 1939, but the fact that these infested trees are in the near vicinity of the Ranger Headquarters should give them a rather high priority for control.

Recommendations: The same as for Juniper Lake.

7. Butte Lake

This unit includes the area around the north, east, and south sides of the Lake. No control work was done in this area in 1940 and the infestation in Jeffrey, ponderosa, and lodgepole pine appears more active than in 1939. Increases were noted for all the above species, with 11 Jeffrey, 2 ponderosa, and 15 lodgepole pines infested in 1940. The area showing greatest activity is the west facing slope on the east side of the Lake.

Recommendations: Control is recommended for this area if facilities and early spring weather conditions permit, the project to have medium priority.

B. Highway Areas

Under this heading will be discussed the infested trees bordering some of the mainly used highways in the Park up to a distance of about 2½ chains on each side. These are separated into different zones according to the timber type.

1. Chaos Crags to Hat Lake

Losses along this section of highway are primarily confined to Jeffrey pine and white fir. Some control work was done along this highway in 1940 and there appears to have been but little increase in the Jeffrey pine beetle. Losses in fir, however, appear to be definitely increasing. It is estimated that there are 10 Jeffrey, 2 ponderosa, and 13 white fir along this sector.

Recommendations: Control is recommended for the Jeffrey and ponderosa pine, to have medium priority. Control for fir to have low priority.

2. Hat Lake to the Summit

Losses along this section of the highway are confined principally to the firs, both red and white. It is estimated that there are 35 red and 20 white fir along the highway with active infestations in them.

Recommendations: From the standpoint of loss of cover, red fir ranks first among the other tree species along the main loop highway in the Park. From the scenic values involved it would appear desirable

to attempt control of the fir engraver beetle in this species if facilities permit. Many of the infested trees along the right of way will eventually develop into snags which will need removal from a traffic hazard standpoint. Therefore it would seem desirable that this removal be made while insect broods were still in the tree so that this portion of the population might be destroyed.

3. The Summit to South Boundary

Losses in this sector are much the same type as those discussed under 2 above, except that practically all the loss is confined to red fir. It is estimated that there are about 25 trees in this sector which need control.

Recommendations: The same as for No. 2.

4. Hat Lake to Butte Lake, via Badger Flat

Losses along this fire protection road are principally confined to lodgepole and Jeffrey pines. It is estimated that there are about 50 lodgepole and 11 Jeffrey and 1 ponderosa and 2 white fir infested along this sector.

Recommendations: As this area is probably not used by the general public to any great extent, control is recommended for this area with a low priority status. However, there are indications that the mountain pine beetle is becoming increasingly active in the Badger Flat area and if resources permit it would be advisable to do some control in that area.

5. South Boundary of Park at Chester to Juniper and Horseshoe Lake.

Losses in this sector of this secondary road are about equally divided between red fir and lodgepole pine. It is estimated that there are about 50 trees of each species with active infestation in them.

Recommendations: Control is recommended if facilities permit, but to have low priority.

Table II

Number of Insect Infested Trees along Highways - Winter of 1940

Type of Highway	Highway Sector	Tree Species					Total No. of Trees
		JP	PP	LP	WF	RF	
Loop Highway (main paved)	Chaos Crags to Hat Lake	10	2		13		25
	Hat Lake to The Summit			3	19	37	59
	Summit to South Boundary					23	23
Fire Protection Road (unpaved)	Hat Lake to Butte Lake via Badger Flat	11	1	50	2		64
Secondary Roads (rough gravel)	South Boundary to Juniper and Horseshoe Lake			38		45	83
Total		21	3	91	34	105	254

C. Miscellaneous Areas

There are two areas in addition to those discussed above which might be mentioned as worthy of control considerations. These include the area of Jeffrey and ponderosa pine in the Lost Creek area and an active infestation in a white fir pole stand about a mile north of the loop highway, Lost Creek crossing.

1. Lost Creek

There is considerable loss in Jeffrey and ponderosa pine along Lost Creek on the east facing slope west of "Hot Rock" and on the east side of Lost Creek north of the point where it crosses the Loop Highway.

Recommendations: Control is recommended for this area, but to have low priority.

2. White Fir Group

In this area of young pole white firs, about a mile north of Lost Creek at the point at which it crosses the Loop Highway and on the west side of the highway, there is an epidemic of fir engraver beetle. It is estimated that there has been from 150 to 200 fir poles killed in this local area during 1939 and 1940.

Recommendations: Control is recommended in this area, but to have a low priority status.

SUMMARY OF CONTROL RECOMMENDATIONS

In the previous part of this report certain control recommendations have been made for specific areas. These are principally based upon entomological considerations, but are tempered somewhat by the possibilities of practical application and the intensity of public use in the areas involved.

It appears that the control needs for the park during 1941 are of such a magnitude as to justify a full time "bug crew" for the season. Due to the considerable range in elevation and the variable time of snow melting in the park, direct control by peeling and burning could be safely done well into the middle of the summer. The balance of the season might well be devoted to solar heat control in some of the thin-barked species such as lodgepole.

From the standpoint of priority, the control recommendations might be summed up as follows:

Table III. Summary of Control Recommendations

Priority	Area	Number of Infested Trees						
		JP	PP	LP	WF	RF	SF	Total
1	Manzanita Lake	28		1	5		2	36
2	Summit Lake	21				1		22
3	Butte Lake	11	2	15				28
4	Chaos Crags to Hat Lake	10	2		13			25
5	Juniper and Horseshoe Lake			21				21
6	Kings Creek			3		1		4
7	Sulphur Works					12		12
8	Lost Creek	15	6		100		3	124
9	Hat Lake to South Boundary			3	20	60		83
10	South Boundary to Juniper and Horseshoe Lakes			40		50		90
11	Hat Lake to Butte Creek	11	1	50	2			64
	Total	96	11	133	140	124	5	509

BUREAU COOPERATION IN A CONTROL PROGRAM

The Bureau personnel from the local Hat Creek Field Laboratory are prepared to offer all possible aid in spotting and suggestions in any control program which is adopted. A further check of some of the lodgepole areas is contemplated by the Bureau personnel as soon as snow conditions permit.